

Attorney Docket No. 110963 004 US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

APPLICANT : Peter Marten Van Der Horst
SERIAL NO. : 10/584,005 Appeal No. _____
CUSTOMER NO. : 27384
CONFIRMATION NO. : 8565
FILED : August 15, 2006
FOR : PAPER COMPRISING QUATERNARY NITROGEN
CONTAINING CELLULOSE ETHER
ART UNIT : 1741
EXAMINER : Dennis R. Cordray

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SIR:

APPELLANT'S BRIEF ON APPEAL

PURSUANT TO 37 C.F.R. § 41.37.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If entry and consideration of this Appeal Brief requires an extension of time, applicant respectfully requests that this be considered a petition therefore. The Assistant Commissioner is authorized to charge any fee(s) due in connection to Deposit Account No. 14-1263.

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This brief contains items under the following heading as required by 37 CF.R. § 41.37:

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- I. REAL PARTY IN INTEREST

The real party in interest for this appeal is Akzo Nobel Inc., a company based in Arnhem, Netherlands.

II. RELATED APPEALS AND INTERFERENCES

There are no known appeals or interferences that will affect, be directly affected by, or have any bearing on the Board's decision in this Appeal

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 6 Claims pending in this application.

B. Current Status of Claims

1. Claims canceled: 9
2. Claims withdrawn from consideration but not cancelled: none
3. Claims pending: 1, 2 and 12 - 15
4. Claims allowed: none
5. Claims rejected: 1, 2 and 12 - 15
6. Claims objected to: none

C. Claims on Appeal

The Claims on appeal are Claims 1, 2 and 12 - 15.

IV. STATUS OF AMENDMENTS

No claim amendments to the Claims of appeal have been filed after the Final Rejection in the present application. Claims 5, 8 and 9 were cancelled after the Final Rejection. All of the appealed Claims have been entered and acted upon by the Examiner.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claim involved in the appeal is Claim 1. The dependent claim requiring separate argument under 37 C.F.R. § 41.37(c)(1)(7) is Claim 12. All page, line and figure references are to the Specification.

Independent Claim 1

Claim 1 is directed to a paper (pg. 1, lines 12 - 25). The paper has a filler (pg. 5, line 30 - pg. 6, line 3) content of above 20 wt% (pg. 6, lines 4 - 13) based on the total weight of the paper and a cellulose ether (pg. 3, line 26 - pg. 4, line 14).

The cellulose ether has a DS of quaternary ammonium groups of between 0.01 and 0.7 (pg. 2, lines 9 - 28; pg. 4, lines 16 - 12; original Claim 3), a DS of carboxymethyl groups of between 0.05 and 1.0, (pg. 4, lines 21 - 30; original Claim 4) and a net charge in the range of from -0.7 to -0.04 (pg. 5, lines 9 - 15).

The cellulose ether is not a hydroxyethyl cellulose (pg. 2, lines 10 - 11; pg. 4, lines 4 - 14). The claimed cellulose ether is soluble in water (pg. 3, lines 14 - 23; pg. 5, line 5).

Dependent Claim 12

Claim 12 depends from Claim 1 and is directed to a method of making paper (pg. 1, lines 12 - 25; pg. 6, lines 14 - 29; pg. 7, lines 5, and 13 - 17). The method is performed by adding the cellulose ether of Claim 1 to an aqueous paper stock (pg. 7, lines 5, and 13 - 17). Filler is added to the stock (pg. 5, line 30; pg. 6, line 3; pg. 7, lines 8 - 9). Water is removed from the stock (pg. 2, line 29 - 31; pg. 7, lines 17 - 21). The stock is dried (pg. 2, line 29 - 31; pg. 7, lines 17 - 21).

The paper has a filler content above 20 wt% based on the total weight of the paper (pg. 6, lines 4 - 13).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1, 2, 5, 8, 9 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsuda, et al. (U.S. 5,616,409) in view of Hosokawa, et al. (JP 2002-201202 A – a machine translation provided by the Applicant is used herein) and as evidenced by Watanabe, et al. (U.S. 5,989,391).

2. Claims 12, 13, and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsuda, et al. (U.S. 5,616,409) in view of Hosokawa, et al. and further in view of Ferguson, et al. (U.S. 4,808,633).

3. Claims 1, 2, 5, 8, 9 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Agnemo (U.S. 5,368,689) in view of Hosokawa, et al. and as evidenced by Smook (Handbook for Pulp and Paper Technologies).

VII. ARGUMENT

The rejection of claims 1, 2, and 14 under 35 U.S.C. § 103(a) as being unpatentable over Matsuda, et al. in view of Hosokawa, et al., as evidenced by Watanabe, et al..

Claims 1, 2 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsuda, et al. (U.S. 5,616,409) in view of Hosokawa, et al. (JP 2002-201202 A – a machine translation provided by the Applicant is used herein) and as evidenced by Watanabe, et al. (U.S. 5,989,391). Claim 1 is an independent claim.

The Examiner erred by misinterpreting the teaching of the prior art references and inappropriately combining the references. Without Applicants' own disclosure as a roadmap, one of ordinary skill in the art would not have had any reason to turn to Hosokawa, et al., much less substitute the specific cationically modified cellulose ether derivative described in Hosokawa, et al.

Claim 1 claims a paper with a filler content of above 20 wt% based on the total weight of the paper and a cellulose ether having a DS of quaternary ammonium groups of between 0.01 and 0.7, a DS of carboxymethyl groups of between 0.05 and 1.0, and a net charge in the range of from -0.7 to -0.04. The cellulose ether is not a hydroxyethyl cellulose and is soluble in water.

In combining Matsuda, et al. with Hosokawa, et al., the Examiner has ignored the most significant teachings of Matsuda, et al. and Hosokawa, et al. that support Applicants' contention against the combination of Matsuda, et al. with Hosokawa, et al..

First, the cationically modified cellulose ether of Hosokawa, et al. is not functionally equivalent to the anionic and nonionic cellulose ethers of Matsuda, et al.. And second, Matsuda, et al. discloses the use of a CMC binder that is in a coating layer; while Hosokawa's, et al. cationically modified cellulose ether is in the paper. Thus, Matsuda, et al. and Hosokawa, et al. use different cellulose derivatives in different ways. There is no suggestion in either reference to modify and/or combine them in such a way as the Examiner proposes to arrive at the claimed invention.

In the Advisory Action dated January 3, 2011, the Examiner asserts that Matsuda, et al. discloses an ink jet recording medium comprising a paper substrate having a basis weight from 50 to 100 g/m² and containing from 5 to 30 percent by weight of a filler and retention aids. Further, the Examiner alleges that Matsuda, et al. discloses that the paper comprises a coating in an amount of 2 to 10 g/m² on at least one surface, the coating comprising a white pigment and a binder such as carboxymethyl cellulose. The Examiner concedes that "Matsuda et al. does not disclose the claimed CMC." (Advisory Action, page 2). However, the Examiner fails to

recognize the significance that the teaching of Matsuda, et al. relied on concerns a coating and not the paper.

In the Advisory Action, the Examiner indicates that “the claims as amended no longer require a coating composition, therefore all references to a coating composition is no longer needed and would be withdrawn from the outstanding rejections. (Advisory Action, page 2). This misses the point. The claims never required a coating, but were always directed to a paper. Rather, the Examiner has equated the coating of Matsuda, et al. with “a paper comprising ... cellulose ether” as claimed.

In any event, to supply the missing features of Matsuda, et al., the Examiner alleges that “[o]ne of ordinary skill in the art would have been aware of the relevant prior art teaching retention aids, including Hosokawa, et al.. The Examiner then asserts that Hosokawa, et al. discloses that CMC having a DS of quaternary ammonium groups and a DS of carboxymethyl groups and a net ionic charge overlaying “the claimed CMC” is used as, among other purposes, a retention aid. The Examiner further alleges that the claimed quaternary cationizing groups are disclosed.

Applicants submit that the Office’s rationale for combining these two cited references is flawed. As a preliminary matter, it should be recognized that as recited in Claim 1, the invention is directed to a cellulose ether, which requires a degree of cationic modification. While, the cellulose derivative disclosed in Hosokawa, et al. is described as a cationized (or cationically modified) CMC, the cellulose derivatives of Matsuda, et al. include: CMC, which is anionic, and HEC and HPMC, which are nonionic. Thus, Matsuda does not teach or suggest the use of cationically modified cellulose derivatives. Accordingly, where the Examiner merely concludes that it would

have been obvious to substitute the CMC of Hosokawa, et al. as a retention aid in the paper of Matsuda, et al., the Office fails to take into account that the CMCs of Hosokawa, et al. and Matsuda, et al. are not functionally equivalent.

In fact, the Examiner provides no reason why one of ordinary skill in the art would have substituted the cationically modified cellulose ether of Hosokawa, et al. with the nonionic and anionic celluloses of Matsuda, et al.. In contrast to the Examiner's apparent position of the interchangeability of cationically modified cellulose ethers with the non-cationically substituted celluloses of Matsuda, et al., Applicants submit that cationic groups have strong adherence to particles, such as pigments, typically found in paper coatings. As a result, the use of cationically modified cellulose ethers in paper coatings, such as described in Matsuda, et al., can result in flocculation of the coating, which is detrimental to the coating. This is in contrast to providing good dispersion, which is important to the coating. Consequently, Matsuda, et al. only uses non-cationically substituted celluloses. In contradistinction, the use of cationically modified cellulose ethers in papers, such as described in Hosokawa, et al., are for different applications with different concerns. In addition, at page 3 of the present application, it is described that the claimed cationically modified cellulose ether outperforms non-substituted CMCs, such as disclosed in Matsuda, et al.

In the Response to Arguments section of the Final Office Action on page 2, third paragraph, the Examiner cites case law in which the Examiner states that he "recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found in the references themselves or in

the knowledge generally available to one of ordinary skill in the art.” In applying the law, the Examiner then states that Matsuda, et al. discloses a paper coating comprising a CMC binder adhesive, but concedes that Matsuda, et al. provides little guidance on the nature of the CMC as a binder. Where the law indicates the presence of some teaching, suggestion or motivation is required to combine or modify the prior art, the Examiner instead relies on the lack of guidance in Matsuda, et al. as the rationale for turning to Hosokawa, et al. That is, the Examiner alleges that one of ordinary skill in the art would have turned to other sources, such as Hosokawa, et al., for the nature of CMC that can be used as the binder based on the lack of guidance present in Matsuda, et al. on the materials.

The Examiner’s position that of all of the sources available disclosing possible CMCs useful as binders, one of ordinary skill in the art would have chosen the specific cationically modified cellulose ether derivative of Hosokawa, et al., without any guidance from Matsuda, et al., clearly is a use of impermissible hindsight and/or an improper obvious to try standard.

Alternatively, to the extent Examiner contends that “it would have been obvious to try a general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it.”. As set forth in M.P.E.P. Section 2145 (X)(B), such an obvious to try standard is an improper rationale for combining references.

Matsuda, et al. discloses that its paper comprises a coating in an amount of 2 to 10 g/m² on at least one surface, the coating comprising a white pigment and a binder such as carboxymethyl cellulose. Further, from among a list of possible binders for its

coating layer, Matsuda, et al. generally discloses the use of cellulose derivatives as a binder in its coating layer, while exemplifying carboxymethyl cellulose (CMC), hydroxethyl cellulose (HEC) and hydroxypropyl methyl cellulose (HPMC). Here, even among the exemplary celluloses, the list encompasses large numbers of possible celluloses. Moreover, none of the binders identified in Matsuda, et al. are cationically modified polymers, much less that the specified cellulose ethers are cationically modified. Rather, the cellulose derivatives of Matsuda, et al. are CMC, which is anionic, and HEC and HPMC, which are nonionic. Regardless of this lack of teaching, the Examiner alleges that one of ordinary skill in the art would have been able to determine and use the cationically modified CMC of Hosokawa, et al. having adhesive properties as the binder in the coating of Matsuda, et al. and have a reasonable expectation of success in obtaining a suitable coating. This conclusion presumes, however, that one of ordinary skill in the art would have known to select Hosokawa, et al. in the first place, and second that a cationically modified CMC can be substituted for non-modified CMC. Here again, without Applicants' own disclosure, there is no teaching, suggestion or motivation for one of ordinary skill in the art to select the specific cationically modified cellulose ether derivative of Hosokawa, et al. in the first place or that such modification would provide a reasonable expectation of success.

The rejection of Claims 12, 13, and 15 under 35 U.S.C. § 103(a) as being unpatentable over Matsuda, et al. in view of Hosokawa, et al. and further in view of Ferguson, et al.

Claims 12, 13, and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsuda, et al. (U.S. 5,616,409) in view of Hosokawa, et al. and

further in view of Ferguson, et al. (U.S. 4,808,633). Claim 12 is dependent on Claim 1. Claims 13 and 15 are dependent on Claim 12. In addition to the reasons provided above with regard to Claim 1, the Applicants assert the following additional arguments.

Claim 12 is directed to a method making paper including the step of adding the cellulose ether of Claim 1 to an aqueous paper stock. In the Advisory Action, at page 7, the Examiner acknowledges that neither Matsuda, et al. nor Hosokawa, et al. include the claimed paper making steps. Thus, the Examiner cites to Ferguson, et al. as allegedly disclosing the claimed paper making steps. The Examiner then concludes that it would have been obvious for one of ordinary skill in the art to use the claimed steps to make the paper of Matsuda, et al. in view of Hosokawa, et al. and further in view of Ferguson, et al. as a typical paper making process. It is further noted that at page 2 of the Advisory Action, the Examiner states that, "Ferguson, et al. was only used to teach typical papermaking process steps that were generally known in the art at the time of the invention."

As previously argued in the Response to the Final Rejection, the Examiner again resorts to the rationale that because of the lack of guidance in Matsuda, et al. one of ordinary skill in the art would have turned to other sources, and not just any source, but Hosokawa, et al. in particular. As noted above, such rationale relies on impermissible hindsight and/or an improper obvious to try standard. In addition, Ferguson, et al. fails to disclose or suggest the method of making the paper as set forth in Claim 1, either alone or in combination with Matsuda, et al. and/or Hosokawa, et al. as Ferguson, et al. fails to make up for the deficiencies of Matsuda, et al. and Hosokawa, et al.

Ferguson, et al. exemplifies only a non-ionic cellulose derivative, i.e. hydroxyethyl cellulose, which is specifically excluded from our claims and cannot be considered the functional equivalent of the claimed cationically modified cellulose ether or the cationically modified CMC of Hosokawa, et al. Accordingly, one of ordinary skill in the art, reading Ferguson, et al. as a whole, would not have relied on the teachings of Ferguson, et al. to arrive at Applicants' claimed invention, as this teaching in Ferguson, et al. leads away from Applicants' claimed invention. It should also be pointed out that where the Examiner states that Ferguson, et al. is only used to teach typical papermaking process steps, such practice ignores the Federal Circuit mandate that the references must be read as a whole, in their entirety, including those portions that lead away from the claimed invention. See M.P.E.P. § 2141.02(VI) ("A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention". Citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)).

Moreover, the invention as recited in Claim 12 is further differentiated from Matsuda, et al. which nowhere discloses or suggests that cellulose derivatives may be included in the paper substrate, but rather discloses such binders in a coating. That is, Claim 12 requires adding the cellulose ether of Claim 1 to an aqueous paper stock, whereas Matsuda, et al. uses its cellulose derivative in a paper coating.

The rejection of Claims 1, 2, 5, 8, 9 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Agnemo in view of Hosokawa, et al. and as evidenced by Smook.

Claims 1, 2, 5, 8, 9 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Agnemo (U.S. 5,368,689) in view of Hosokawa, et al. and as evidenced by Smook (Handbook for Pulp and Paper Technologies). Claim 1 is an independent claim.

In this rejection, the Examiner erred again by misinterpreting the teaching of the prior art references and inappropriately combining the references. First, the Examiner mischaracterizes the teachings of Agnemo. Agnemo, like Matsuda, et al. only discloses carboxymethyl cellulose, at column 3, line 65, where the CMC is described as a coating agent. Accordingly, the combination of the references fails to teach the claimed invention and are improperly combined.

In the Advisory Action dated January 3, 2011, the Examiner asserts that Agnemo discloses a paper comprising retention aids, fillers, a particular acid and a reducing agent. In some embodiments, the paper is supercalendared paper having a filler content of about 20-30% by weight of the dry paper. In other embodiments, the paper is a fine paper comprising 5-30% filler by weight of the dry paper and an outermost layer comprising a surface size or a coating layer. The paper is made by adding the retention aids, fillers to an aqueous papermaking stock, dewatering the stock and drying the stock. The Examiner acknowledges that Agnemo does not disclose “the claimed cellulose ether.”

As with the rejection based on Matsuda, et al. to supply the missing cellulose ether element, the Examiner turns to Hosokawa, et al. alleging that “[o]ne of ordinary skill in the art would have been aware of the relevant prior art teaching retention aids, including JP-2002-201202 A.” Thus, the Examiner concludes that “[a]bsent convincing

evidence of unexpected results due to the claimed CMC, it would have been obvious to one of ordinary skill in the art to use the CMC of JP-2002-210202 A as a retention aid in the paper of Agnemo and to have a reasonable expectation of success in retaining the filler in the paper.” (Advisory Action, page 4).

In the combination of Agnemo and Hosokawa, et al. Agnemo, similar to Matsuda, et al. only discloses carboxymethyl cellulose, at column 3, line 65, where the CMC is described as a coating agent. Thus, Agnemo, like Matsuda, et al., fails to disclose or suggest a cationically modified cellulose ether. Rather, Agnemo discloses a cellulose that is anionic. In addition, Agnemo discloses its CMC binder is in a coating layer, whereas Hosokawa’s, et al. cationically modified cellulose ether is described as being in its paper. In this, the arguments with respect to the combination of Matsuda, et al. and Hosokawa, et al. apply.

Furthermore, it appears as with all of the other previous rejections, the Examiner fails to appreciate the differences between cationically modified cellulose ethers and CMC or other non-substituted celluloses or cellulose derivatives. This is shown, for example, at page 4 of the Final Office Action, where the Examiner alleges that the CMC of Agnemo is interchangeable with the “CMC having a cationic and anionic DS overlaying the claimed cellulose ether...” and throughout the Advisory Action, where the Examiner refers to “the claimed CMC” (where it should be “the claimed cellulose ether” when referring to our claims). As explained above, the cationic functionality changes the character of the cellulose ether and provides properties, such as strong adherence to particles that can cause flocculation in coatings that are not seen from the use of non-substituted cellulose derivatives or anionic cellulose in coatings. In fact, page 3 of

the present application explains such differences. On the other hand, where we have recognized the benefits of the combination of highly filled paper and a cationically modified cellulose ether, none of the cited references, either alone or in their combination, disclose, suggest or even hint at such benefits resulting from such combination. For all of the above reasons, Claims 1, 2 and 12 - 15 are patentable over the cited references

VIII. CLAIMS APPENDIX

A copy of the claims involved in the appeal is provided in Appendix A.

IX. EVIDENCE APPENDIX

None.


X. RELATED PROCEEDINGS APPENDIX

None.

ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess, to Deposit Account No. 14-1263.

Respectfully submitted,
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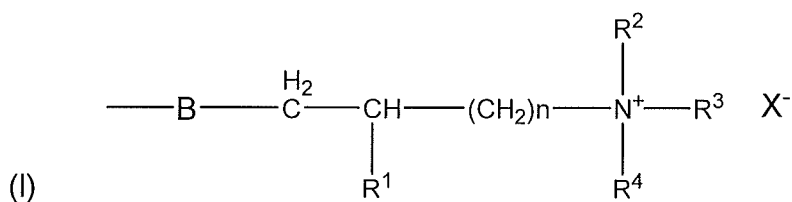
April 12, 2011

APPENDIX A

CLAIMS APPENDIX

1. A paper comprising a filler content of above 20 wt% based on the total weight of the paper and a cellulose ether having a DS of quaternary ammonium groups of between 0.01 and 0.7, a DS of carboxymethyl groups of between 0.05 and 1.0, and a net charge in the range of from -0.7 to -0.04, with the proviso that the cellulose ether is not a hydroxyethyl cellulose and wherein the cellulose ether is soluble in water.

2. The paper according to claim 1 wherein the quaternary ammonium group is represented by the formula:

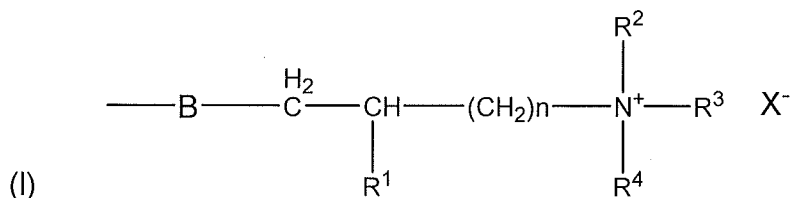


wherein R^1 is H or OH, R^2 , R^3 , and R^4 are the same or different and are selected from $\text{C}_1\text{-C}_{24}$ alkyl, $\text{C}_6\text{-C}_{24}$ aryl, $\text{C}_7\text{-C}_{24}$ aralkyl, $\text{C}_7\text{-C}_{24}$ alkaryl, $\text{C}_3\text{-C}_{24}$ cycloalkyl, $\text{C}_2\text{-C}_{24}$ alkoxyalkyl, and $\text{C}_7\text{-C}_{24}$ alkoxyaryl groups, or R^2 , R^3 , R^4 , and the quaternary nitrogen atom form an aliphatic or aromatic heterocyclic ring; n is an integer of 1 to 4, B is attached to the backbone of the cellulose ether and selected from O, OC(O) , C(O)O , C(O)-NH , NHC(O) , S, OSO_3 , OPO_3 , NH, or NR^5 , wherein R^5 is a $\text{C}_2\text{-C}_6$ acyl or a $\text{C}_1\text{-C}_4$ alkyl radical, and X^- is an anion.

12. A method of making paper comprising:
 adding the cellulose ether of claim 1 to an aqueous paper stock
 adding a filler to said stock;
 removing water from said stock; and
 drying said stock;

wherein the paper has a filler content above 20 wt% based on the total weight of the paper.

13. The method of claim 12 wherein said quaternary ammonium groups are represented by the formula:



wherein R¹ is H or OH, R², R³, and R⁴ are the same or different and are selected from C₁-C₂₄ alkyl, C₆-C₂₄ aryl, C₇-C₂₄ aralkyl, C₇-C₂₄ alkaryl, C₃-C₂₄ cycloalkyl, C₂-C₂₄ alkoxyalkyl, and C₇-C₂₄ alkoxyaryl groups, or R², R³, R⁴, and the quaternary nitrogen atom form an aliphatic or aromatic heterocyclic ring; n is an integer of 1 to 4, B is attached to the backbone of the cellulose ether and selected from O, OC(O), C(O)O, C(O)-NH, NHC(O), S, OSO₃, OPO₃, NH, or NR⁵, wherein R⁵ is a C₂-C₆ acyl or a C₁-C₄ alkyl radical, and X⁻ is an anion.

14. The paper according to claim 1 wherein the paper has a filler content about 25 wt% based on the total weight of the paper.

15. The method of claim 12 wherein the paper has a filler content above 25 wt% based on the total weight of the paper.

10. EVIDENCE APPENDIX

No evidence under §§ 1.130, 1.131, or 1.132 has been submitted.

11. RELATED PROCEEDINGS APPENDIX

There have been no decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 CFR 41.37